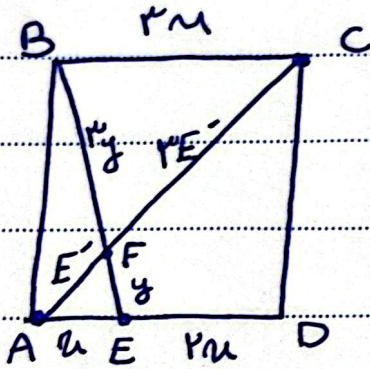




$$\frac{EF}{AF} = \frac{1}{2}$$

$$PAE = ED$$

(1)

$$\Delta ADC \Rightarrow \sqrt{9m^2 + 9m^2} = 3\sqrt{2}m \leq AC$$

$$\Delta ABE \Rightarrow \sqrt{9m^2 + m^2} \rightarrow \sqrt{10}m \leq BE$$

(5)

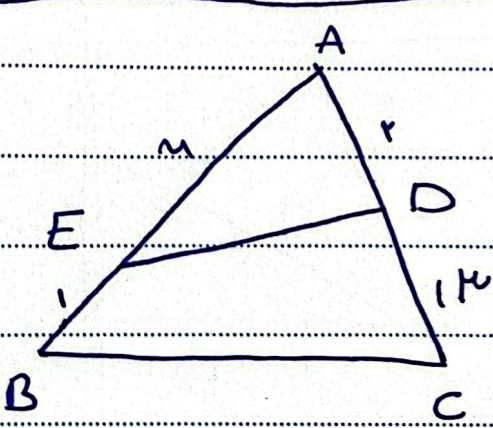
$$\Delta AFE \sim \Delta CFB \Rightarrow \frac{AF}{EF} = \frac{CF}{FB} = \frac{AE}{BE} = \frac{m}{2m} = \frac{1}{2}$$

$$EF = y \rightarrow y + 2y = \sqrt{10}m \Rightarrow y = \frac{\sqrt{10}}{3}m$$

$$AF = E' \rightarrow E' + 2E' = 2\sqrt{2}m$$

$$E' = \frac{2\sqrt{2}}{3}m$$

$$\frac{EF}{AF} = \frac{\frac{\sqrt{10}}{3}m}{\frac{2\sqrt{2}}{3}m} = \frac{\sqrt{10}}{2\sqrt{2}} = \frac{\sqrt{5}}{2}$$



$$\langle m \rangle \quad \hat{AED} = \hat{ACB}$$

(2)

$$\hat{AED} = \hat{ACB} \quad \hat{A} = \hat{A} \quad \rightarrow \quad \Delta AED \sim \Delta ACB$$

(5)

$$\frac{AE}{AC} = \frac{ED}{BC} = \frac{AD}{AB}$$

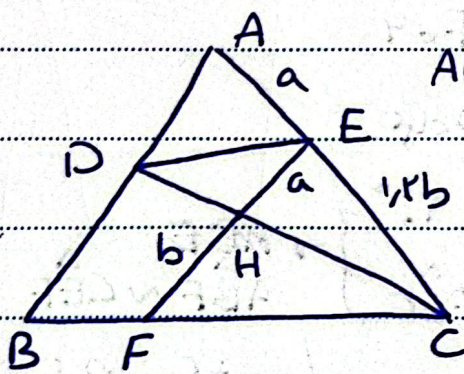
$$\frac{m}{10} = \frac{1}{m+1} \rightarrow m^2 + m = 10 \rightarrow m^2 + m - 10 = 0$$

$$(m+4)(m-5) = 0$$

$$m = -4 \rightarrow \text{غیر صحیح}$$

$$m = 5 \rightarrow \text{صحیح}$$

3) $DE \parallel BC$, $DE = 3m$, $BF = 4$ اندازه BC کجاست؟



$$\triangle ABC : DE \parallel BC \quad \frac{AE}{AC} = \frac{DE}{BC} \rightarrow \frac{a}{a+1/2b} = \frac{DE}{4+1/2b}$$

$$\frac{a}{a+1/2b} = \frac{DE}{4+1/2b} \rightarrow \frac{DE}{4+1/2b} = \frac{a}{a+1/2b} \rightarrow DE = 4+1/2b$$

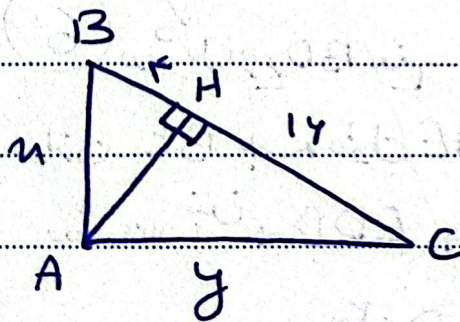
$$DE \parallel FC \Rightarrow \frac{DE}{FC} = \frac{EH}{HF} \rightarrow \frac{DE}{FC} = \frac{a}{b} = \frac{1}{2}$$

$$\triangle DE \sim \triangle FC$$

$$1, 2 \rightarrow 1/2 FC = \frac{1}{2} FC \rightarrow 1/2 FC = \frac{1}{2} FC$$

$$FC = \frac{10}{2} = 5, \text{ و } 0$$

$$BC = BF + FC \rightarrow 4 + 5 = 9, \text{ و } 8$$



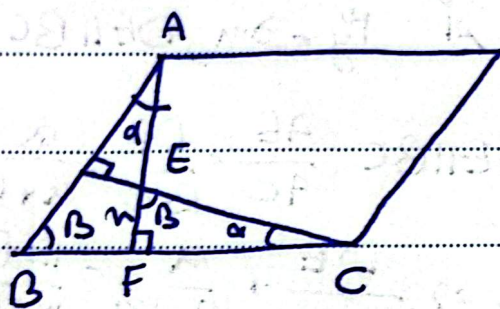
$$m^2 = BH \times BC \rightarrow m = \sqrt{14}$$

$$y^2 = CH \times BC \rightarrow y = \sqrt{14}$$

$$\frac{y}{m} = \sqrt{14} \rightarrow r$$

$$\frac{y}{m} = r$$

$$\frac{m}{y} = \frac{1}{r}$$



(5)

$$AE = 1$$

$$BF = 4$$

$$AD = 12$$

$$\hat{A}FE = \hat{A}FC = 90^\circ$$

$$\hat{ABF} = \hat{FEC}$$

$$\rightarrow \triangle ABF \sim \triangle FEC$$

$$\hookrightarrow \frac{AF}{CF} = \frac{BF}{EF}$$

$$AF = m + AE = 12$$

$$f + 1 \rightarrow$$

$$m^2 + 12m - 48 = 0$$

$$(m + 12)(m - 4) = 0$$

$$m = -12 \rightarrow \text{غیر ممکن}$$

$$m = 4 \rightarrow \text{مطلوبه}$$

(6) در مثل زیر BD منصف است از BE ارتفاع دارد بر ضلع BE



موازی BC با E طول AE را بیابید

مسئله: $2\alpha = 90^\circ \rightarrow \alpha = 45^\circ \rightarrow \angle EDB = 90^\circ$

$BC \parallel OD, BD \parallel \rightarrow \angle D = 2\alpha$

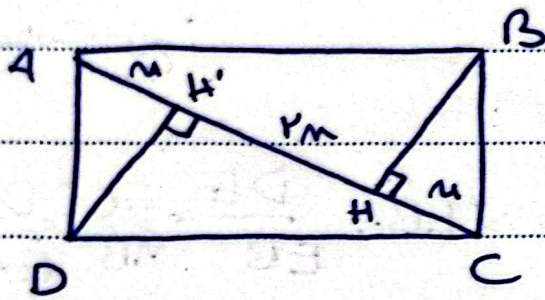
$$m^2 - 5,5x + 0,8 \rightarrow m = 5,5$$

$$\frac{AO}{AB} = \frac{OD}{BC} \rightarrow$$

$$\frac{y + 4,5}{y + 11} = \frac{11}{12} \rightarrow 12y + 54 = 11y + 132$$

$$y = 78$$

$$y = \frac{78}{2} \rightarrow 39$$



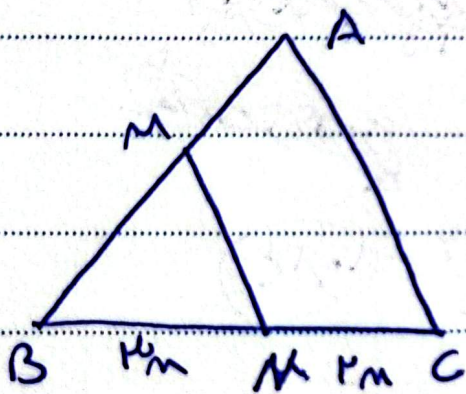
$$S_{BHC} = \frac{n \times BH}{2}$$

(7)

$$S_{ABC} = \frac{BH \times m}{2}$$

$$S_{\text{مربع}} = S_{ABC} + S_{ADC} = BH \times m$$

$$\frac{S_{\text{مربع}}}{S_{BHC}} = \frac{BH \times m}{\frac{n \times BH}{2}} \rightarrow \frac{m}{n} = 1$$



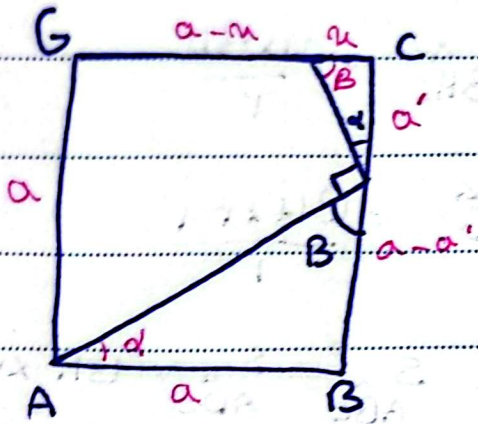
$$\frac{S_{ABC}}{S_{BMN}} = \frac{\frac{1}{2} \times AB \times BC \times \sin B}{\frac{1}{2} \times BM \times BN \times \sin B}$$

$$\frac{AB \times BC}{BM \times BN} = 4$$

(5)

$$\frac{AB}{BM} = \frac{4}{1} \rightarrow \frac{AB - BM}{BM} = \frac{3}{1} \Rightarrow \frac{3}{1} = \frac{AM}{BM}$$

$$\frac{BM}{AM} = \frac{1}{3} = 1/3$$



مساحت مربع

(9)

$$\triangle DEC \sim \triangle EBA \quad \frac{DE}{EB} = \frac{EC}{AB} = \frac{DE}{EA}$$

$$\frac{M}{a-a'} = \frac{a'}{a} \Rightarrow \frac{1}{\epsilon} \rightarrow a = \frac{a'}{\epsilon}$$

$$F_m = m \cdot r_y$$

$$F_m \leq r_y \rightarrow \frac{M}{y} \leq \frac{F}{r}$$

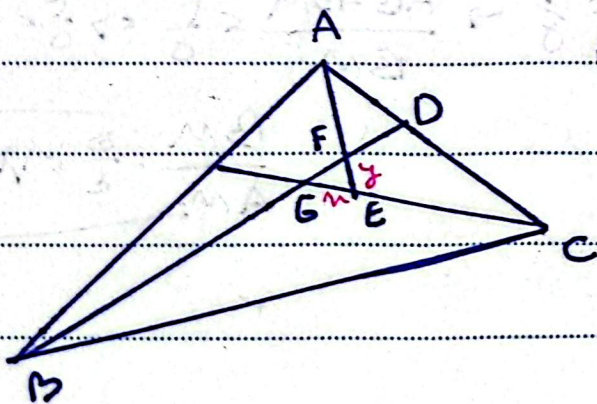
$$ABE \rightarrow 14a' + (a-a')^2 \rightarrow 14 = 14a' + 9a'^2$$

$$a' = \frac{14}{10} \quad a' = \frac{14}{10}$$

$$a = \frac{14}{10} / a = \frac{14}{10}$$

$$S_{pr} = a^2 = \frac{14 \times 14}{10} \rightarrow \frac{196}{10} = (10, 28)$$

(10)



$$\triangle ABC \Rightarrow AE, BE \rightarrow \text{new}$$

$$GF \leq \frac{r}{\mu} y \quad FD \leq \frac{1}{\mu} y$$

$$\frac{BD}{FD} \leq \frac{\mu y}{\frac{1}{\mu} y} = 9$$